



**Power Xpress™
Bollard Charge Station
Installation Guide**



Power Xpress™ Bollard Charge Station Installation Guide

Technical Support

1-877-805-EVSE (3873)

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Power Xpress™ Bollard Charge Station Installation Guide



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INSTALLATION SAFETY**SAVE THESE IMPORTANT SAFETY INSTRUCTIONS.**

This guide contains important instructions that must be followed during the installation of the electric vehicle supply equipment (EVSE). All instructions should be carefully read before installation of the EVSE.

- ⚠ **WARNING:** Turn OFF the circuit breaker at the service or distribution panel before performing any electrical work or repairs.
- ⚠ **WARNING:** The EVSE should be installed by a licensed electrician in accordance with all local electrical codes, ordinances, and all authorities having jurisdiction.
- ⚠ **WARNING:** Do not install the EVSE near flammable, explosive, or combustible materials. Do not locate or store flammable, explosive, or combustible materials near the EVSE.
- ⚠ **WARNING:** Improper installation of the EVSE can result in personal injury or product damage.
- ⚠ **WARNING:** This EVSE installation guide is not a substitute for electrical safety precautions.
- ⚠ **WARNING:** Use this EVSE within the specified operating parameters. Failure to do so may result in injury or death.
- ⚠ **WARNING:** Locate and install this EVSE in a location where the charge cable will not be stepped on, tripped over, or subject to damage or stress.
- ⚠ **WARNING:** The EVSE must be connected to a grounded, metal, permanent wiring system, or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal on the EVSE.
- ⚠ **CAUTION:** Incorrect installation of the EVSE can result in damage to the vehicle's battery and to the EVSE itself. These damages will void the warranty for the vehicle and the EVSE.
- ⚠ **CAUTION:** Do not operate the EVSE in temperatures beyond its operating range of -40°F to +122°F (-40°C to +50°C).

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INSTALLATION CONTENTS: BOLLARD AND EVSE (EL-50650)

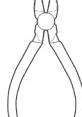
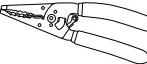
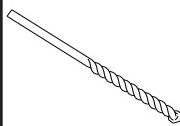
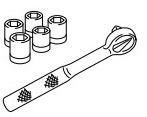
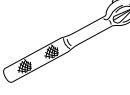
Power Xpress EVSE (EL-50600-300) for Bollard Charge Station

| | | |
|--|--|--|
| 1 | EVSE (including attached cable with strain relief and grommet, input/output decals, flag tag, and vehicle coupler) | |
| 1 | Decal and cover kit | |
| 1 | Cable-management hook | |
| 1 Power Xpress Bollard Charge Station Installation Guide | | |
| 1 Power Xpress EVSE User Manual | | |

Bollard and Hardware (EL-50600-500)

| | | |
|---|--|--|
| 1 | Bollard (including upper and lower plastic covers) | |
| 2 | Cable-management retaining screws (pre-installed) | |
| 1 | Locating set screw (plastic bag attached to bollard) | |

TOOLS SUGGESTED FOR INSTALLATION (NOT PROVIDED)

| | | | |
|---|------------------------------|--|---------------------------|
|  | Tape measure |  | Wire cutters |
|  | 2-ft Level |  | Wire stripper |
|  | Pencil |  | Nonmetallic wire stripper |
|  | Power hammer drill |  | Masonry drill bit set |
|  | Small flat-blade screwdriver |  | Needle-nose pliers |
|  | 7/16-in. Open-end wrench |  | Expandable pliers |
|  | 1/2-in. Ratchet and sockets |  | Torque wrench |

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APPLICABLE ELECTRICAL SYSTEMS

IMPORTANT: The on-site service connection must be properly identified before installation of the EVSE. If you are unsure of the available service connection, consult the local utility company or contact Service Solutions US at 1-877-805-EVSE (3873).

NOTE: The L1, L2, and ground outputs (H, N for Europe) in the following illustrations correspond to the inputs on the EVSE.

NOTE: For the (earth) ground connection, always connect the neutral at the service panel to earth ground. Ground fault protection is not possible unless the neutral (center tap on the service transformer) is connected to an earth ground.

220/240V Single Phase (North America)

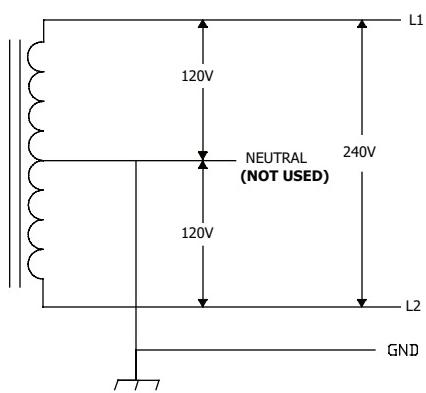


Figure 1. 220/240V Single Phase

⚠ WARNING: The EVSE is a single-phase device. Do not connect all three phases of a 3-phase feed. Only three wires are connected, take care that the service transformer secondary connection is known, and the three wires from the main-panel circuit breaker are correctly connected and labeled.

208V 3-Phase Wye Connection (North America)

Any two of the legs can be used to provide 208V to the EVSE with a Wye-connected secondary. For example, L1 and L2, or L1 and L3, or L2 and L3. Reference the wiring diagram below.

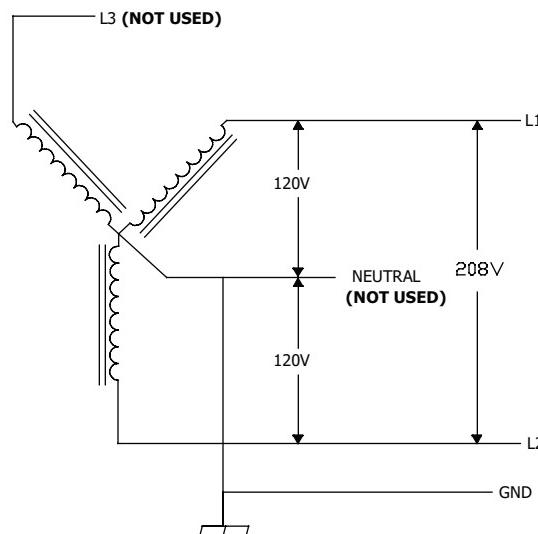


Figure 2. 208V 3-Phase Wye Connection

NOTE: A current-carrying neutral is not required for the EVSE for 208V connections.

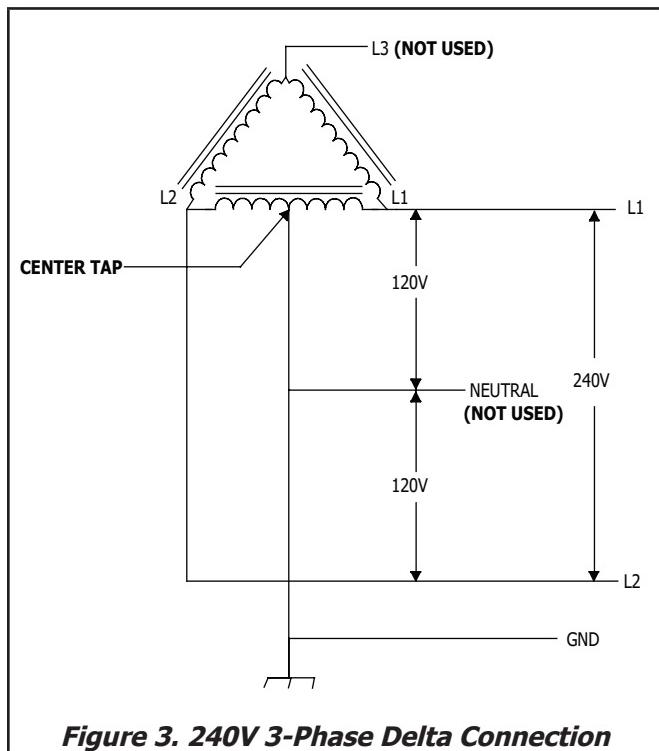
⚠ WARNING: The EVSE must be installed by a licensed electrician and in accordance with all local electrical codes, ordinances, and all authorities having jurisdiction.

⚠ WARNING: Do not install the EVSE near flammable, explosive, or combustible materials. Do not locate or store flammable, explosive, or combustible materials near the EVSE.

240V 3-Phase Delta Connection (North America) with Center Tap on One Leg

One leg must be center-tapped, and only the two phases on either side of the center tap can be used with the delta connection.

NOTE: The third line (L3 on the illustration of the delta) is 208V, with respect to the neutral, and is sometimes referred to as a "stinger."



⚠ WARNING: Do not use this third line.

NOTE: The two used phases must each measure 120V to neutral or ground.

NOTE: Consult the utility company or the transformer manufacturer's literature to verify that the single leg can supply the required power.

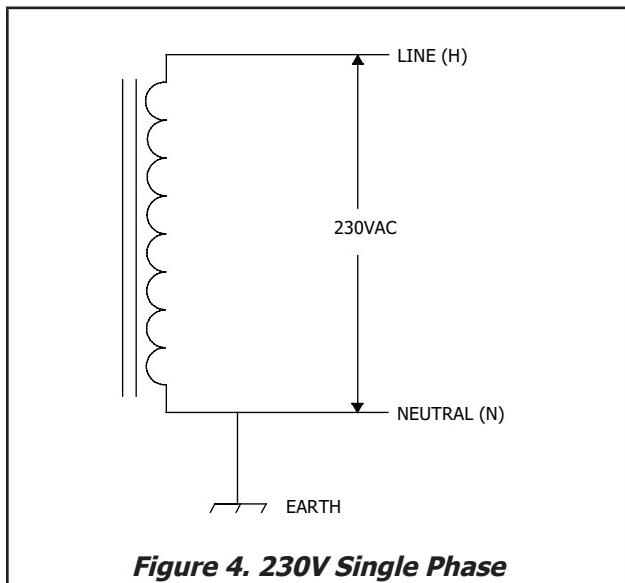
NOTE: The EVSE will only operate properly if it detects the presence of a ground wire connected to a neutral point on the transformer secondary.

⚠ WARNING: Do not use a 3-phase delta-connected transformer secondary without a center tap on one leg and/or without a neutral point available for the required ground connection.

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230V Above Ground (Europe) 230V Single Phase

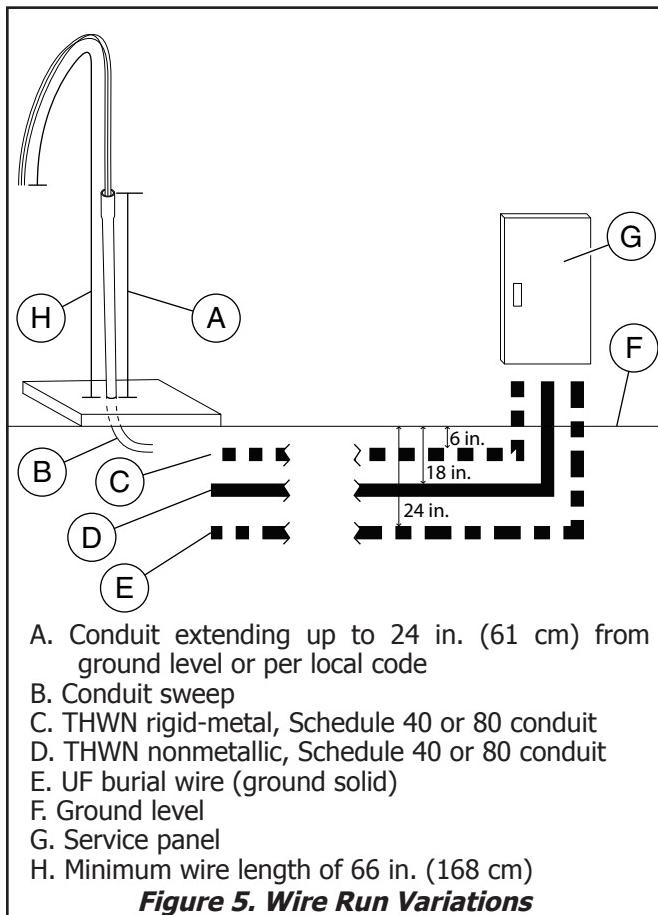


⚠ WARNING: The EVSE is a single-phase device. When connecting the line and neutral wires, take care that the service transformer secondary connection is known, and the wires from the main circuit breaker panel are correctly connected and labeled. The following service connections are primarily used in Europe and Australia (sometimes known as "TT Power Grid"). Please reference the following diagram. The line, neutral, and earth outputs on the illustration correspond to the inputs on the EVSE.

⚠ WARNING: The line connection must measure 230V RMS to neutral. Earth must also be connected to the EVSE.

ELECTRICAL REQUIREMENTS FOR BATTERY CHARGING

⚠ CAUTION: The AC electrical connection must have a grounded, dedicated service-main. No other loads shall be connected to the same circuit. Use of a non-dedicated circuit could exceed the current rating of the circuit breaker and cause it to trip or open.



⚠ **WARNING:** The EVSE must be installed by a licensed electrician in accordance with all national and local electrical codes, ordinances, requirements and all authorities having jurisdiction.

The conduit may extend up to 24 in. (61 cm) from ground level. The wiring should extend 66 in. from the base mounting of the bollard. A sweep is used to direct the circuit from the conduit to the electric circuit from the service panel. The three types of acceptable wire runs are:

- THWN rigid metal Schedule 40 or 80 conduit, buried 6 in. (15 cm) below ground level, or per local electrical code.
- THWN nonmetallic Schedule 40 or 80 conduit, buried 18 in. (46 cm) below ground level, or per local electrical code.
- UF burial wire (ground solid), buried 24 in. (61 cm) below ground level, or per local electrical code.
- THHN, THWN, or THWN-2 wires are recommended to allow for proper space requirements inside the 1/2 in. flexible conduit required inside the bollard.

**AMPERAGE AND BREAKER PARAMETERS: FIELD REQUIREMENTS AND
 ADJUSTMENTS FOR EVSE INSTALLATION (NOT REQUIRED FOR 40 AMP
 CIRCUIT INSTALLATION)**

1. Unpack the EVSE.

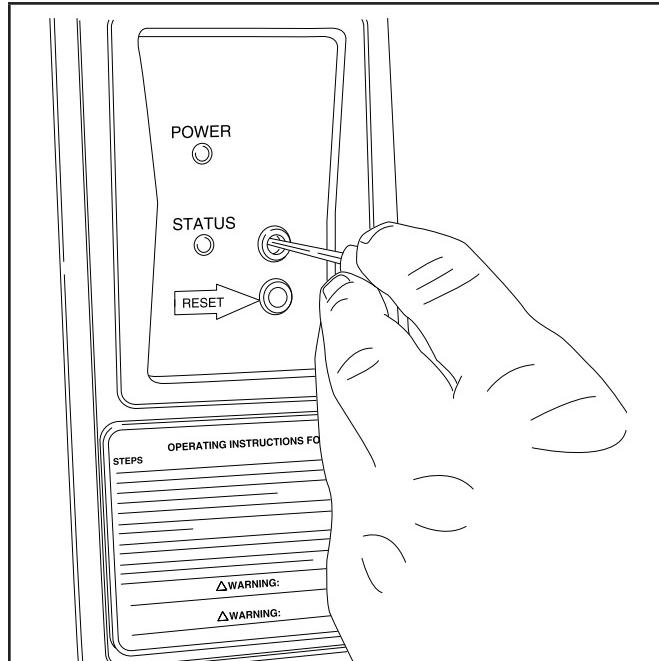
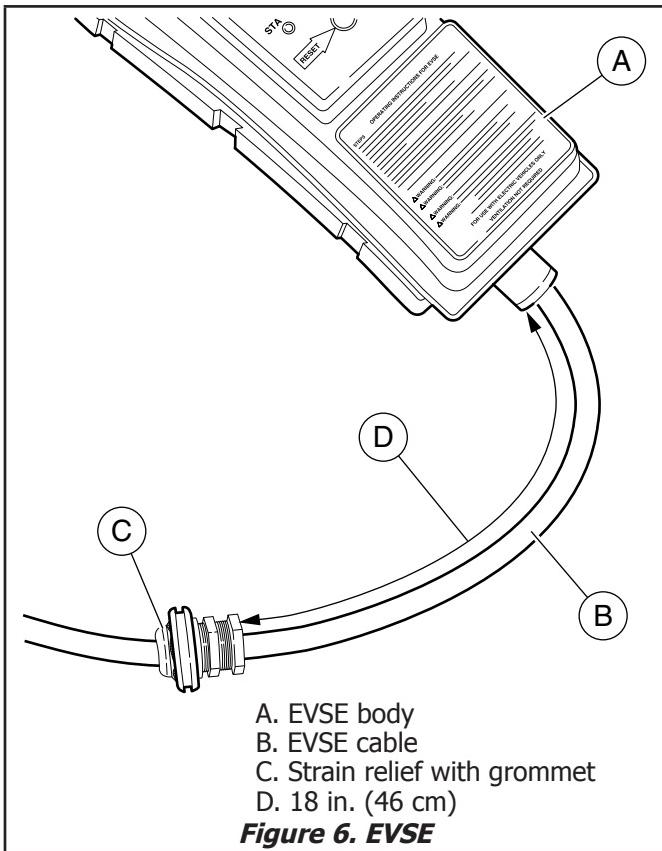


Figure 7. Setting the Current-Adjustment Selector

NOTE: Positions 6, 7, 8, 9, 0 are not used (X) and are non-operational. The EVSE will not function under these settings.

⚠ WARNING: The EVSE setting cannot exceed ampacity ratings of field service wires or branch circuit protectors.

⚠ WARNING: See "output" specification label located on the side of the EVSE for maximum amperage setting, per limitations of vehicle cable and coupler.

NOTE: The EVSE must be de-rated to match line service power limitations.

⚠ CAUTION: Use 75°C (600V) approved wire, conductor temperature at 30°C ambient in wet or dry locations.

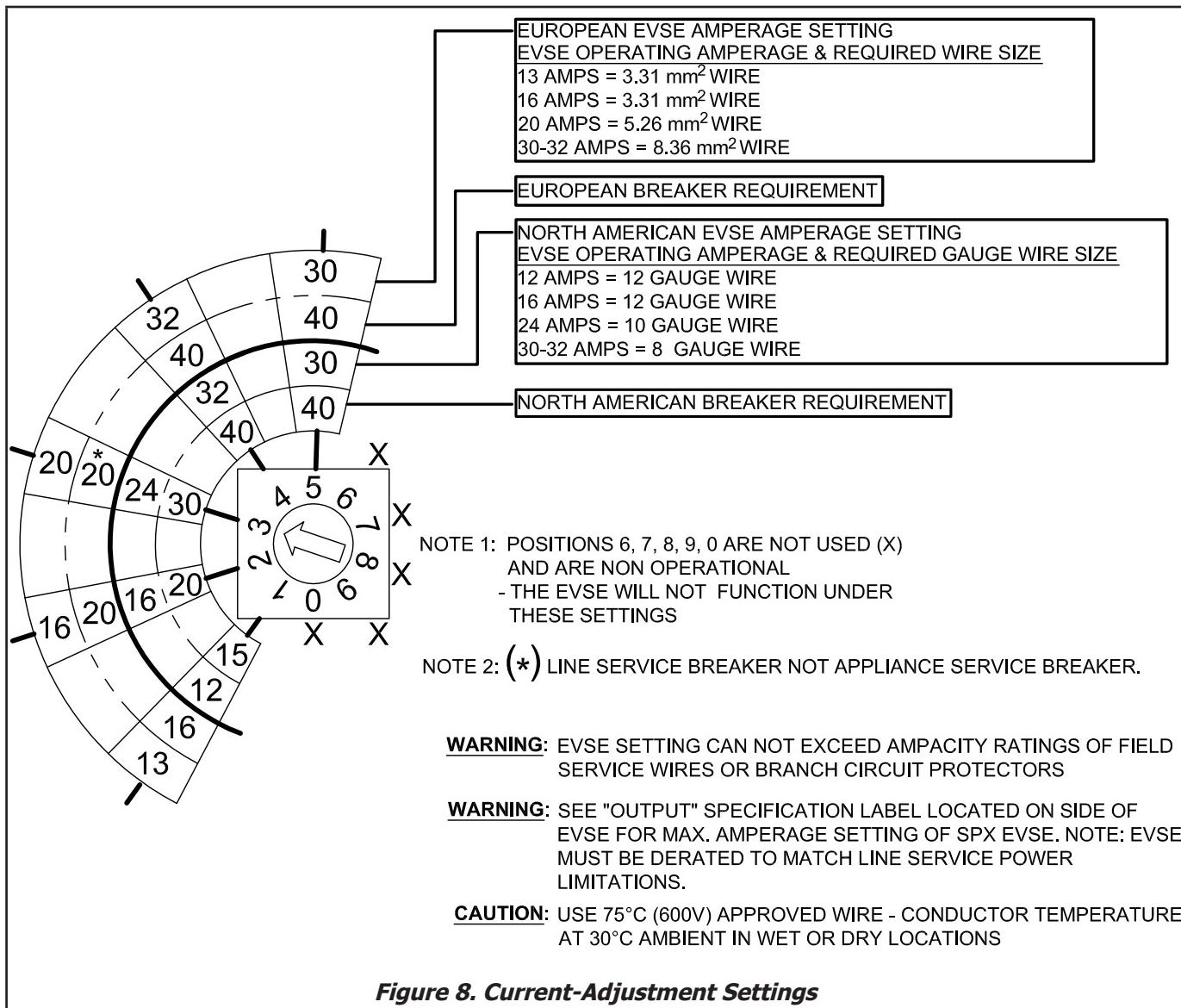


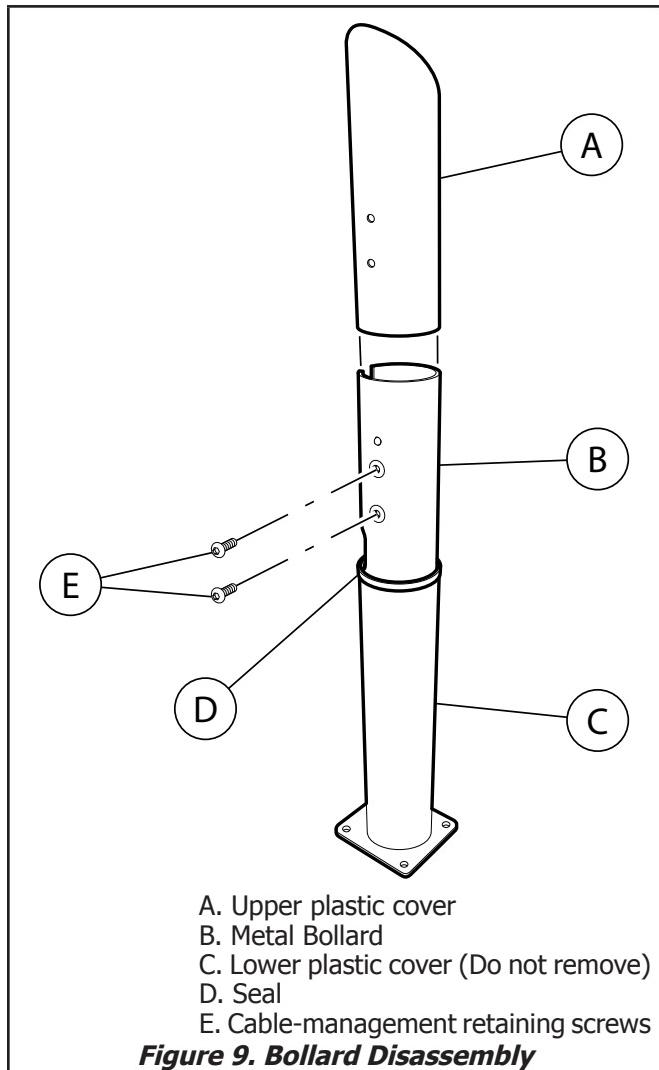
Figure 8. Current-Adjustment Settings

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STANDARD INSTALLATION

1. Lay down the bollard box and remove the banding.
2. Lift the top off the box and remove the bollard from the packaging material.
3. Remove the upper cover from the bollard assembly by removing the cable-management retaining screws (E) on the rear of the bollard.
4. Remove plastic bag containing locating set screw (not shown) from inside bollard.



NOTE: The upper and lower plastic bollard covers are a matched set and cannot be used interchangeably with those from other bollards.

The standard installation design for the Power Xpress Bollard is a bolt-down external plate.

The standard diameter of the bollard is approximately 7 in. The bollard height will vary with the application.

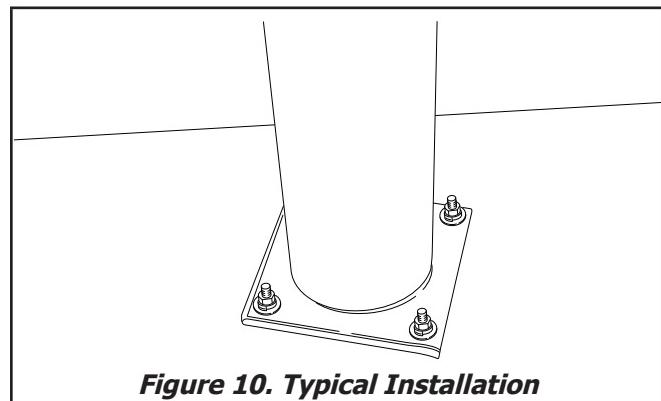


Figure 10. Typical Installation

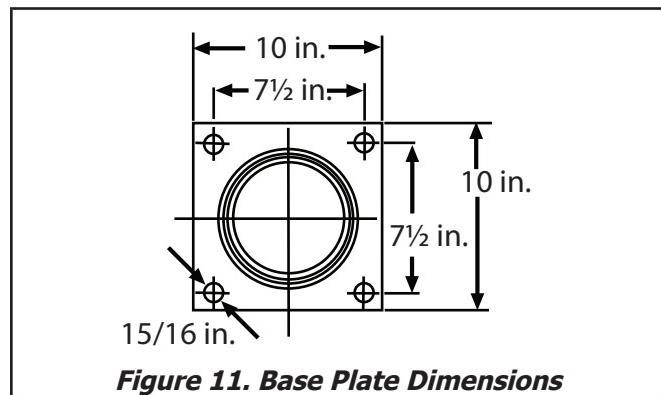


Figure 11. Base Plate Dimensions

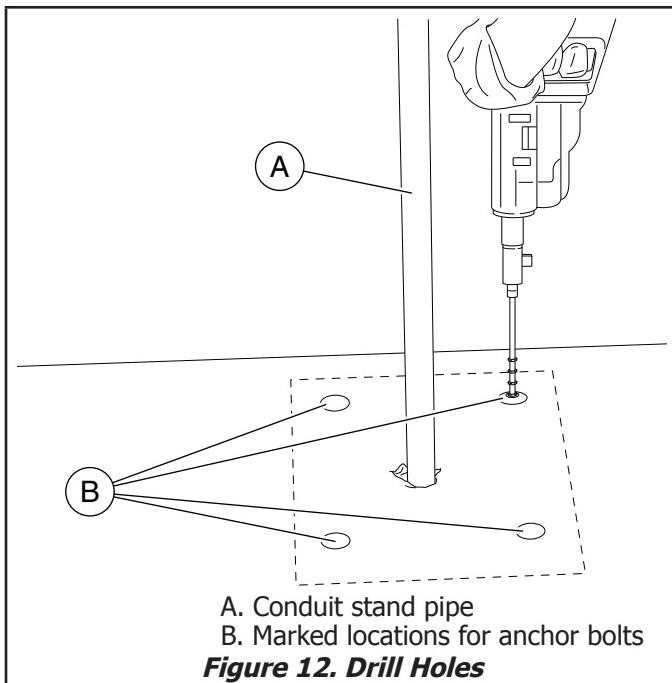
⚠ CAUTION: Read all instructions before installing the EVSE.

⚠ **WARNING: Main service power must be off and disconnected before attempting to install the EVSE.**

⚠ **WARNING: The bollard weighs 20 lb per foot, and the bottom end is significantly heavier than the top end. Take proper precautions and use safe lifting practices when lifting the bollard.**

⚠ CAUTION: All adapter and connection fittings must be classified as liquid-tight. The following types of flexible conduit are recommended: LFMC (liquid-tight flexible metal conduit), LFNC-B (liquid-tight flexible nonmetal conduit), or LFNC-A (liquid-tight flexible nonmetal conduit).

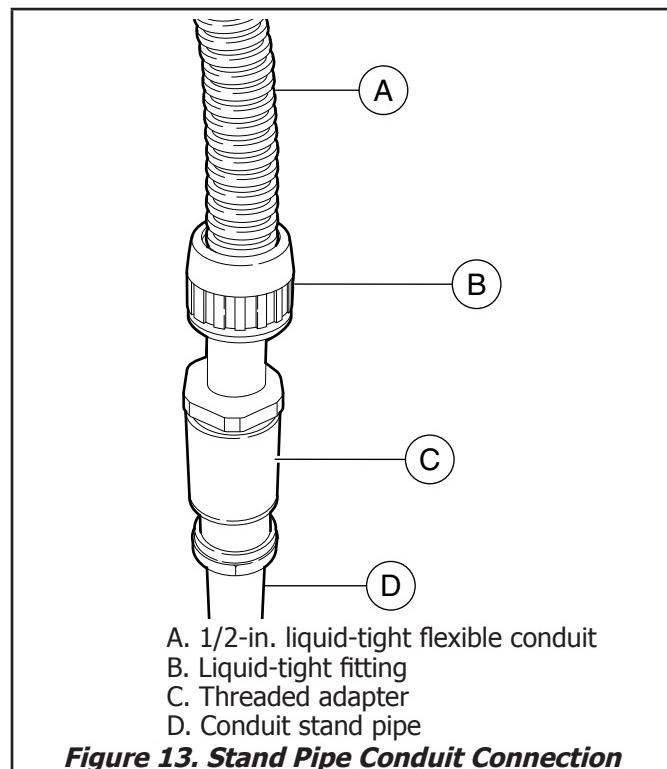
1. Place the bollard where it is to be installed and drill holes.
2. Install the 3/4 in. anchor bolts in accordance with industry standards for the type of mounting being performed.



NOTE: Depending on the type and size of the conduit stand pipe, a variety of adapters may be used to convert the stand pipe to 1/2-in. liquid-tight flexible conduit.

3. Slide the wires through the required adapters and the 1/2-in. liquid-tight flexible conduit.
4. Install 1/2-in. liquid-tight flexible conduit to the conduit stand pipe.

NOTE: Consult national and local codes for approved, liquid-tight flexible conduit.



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5. Place the bollard on its side.
6. Gently guide the conduit through the bottom of the bollard and position the bollard over the bolts and onto the base.

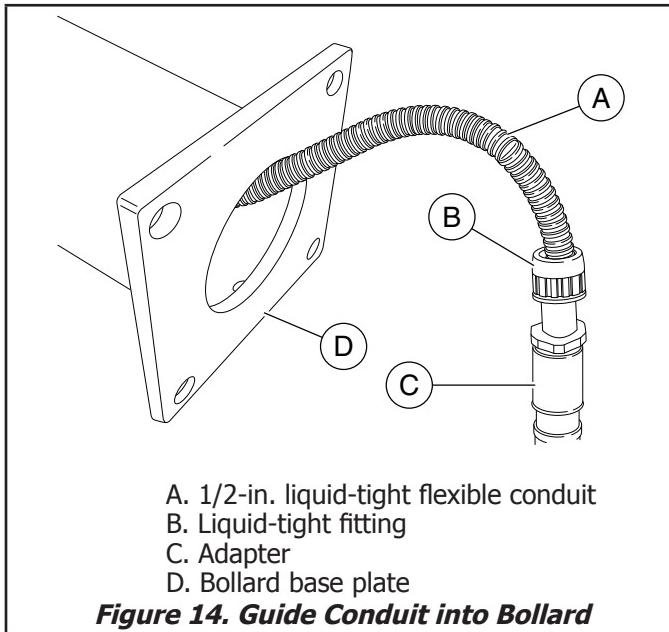


Figure 14. Guide Conduit into Bollard

7. Use a level on two sides (90° apart) of the bollard to check whether the bollard is standing straight.
8. If the bollard is not plum and level, remove the bollard and place washers on the lag bolts as needed to level the bollard.
9. Repeat Steps 7 and 8 until the bollard is level.

NOTE: Alternately, double-nut leveling installation is acceptable.

10. Install a washer, lock washer, and nut on each bolt.

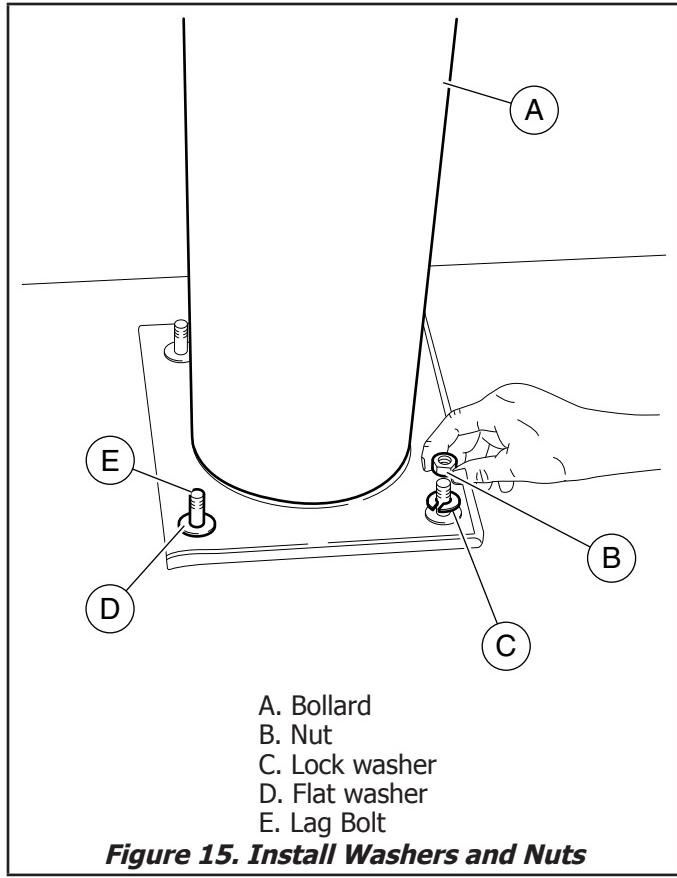
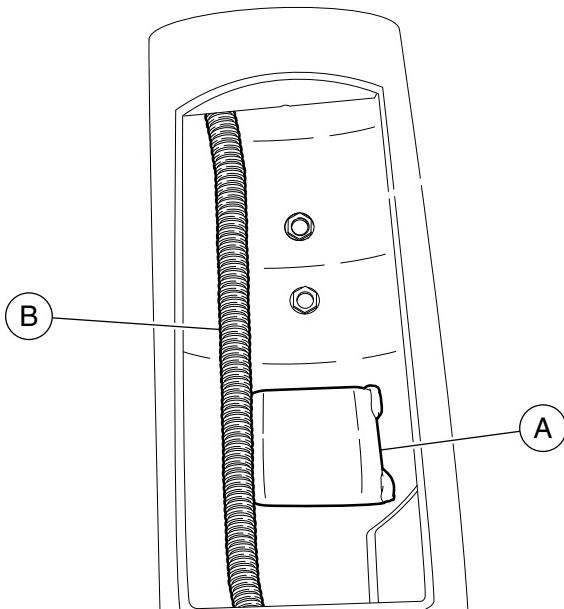


Figure 15. Install Washers and Nuts

11. Tighten the nuts evenly around the bollard. Any gap between the bollard base and the mounting surface may be filled with caulk suitable for the installation environment.

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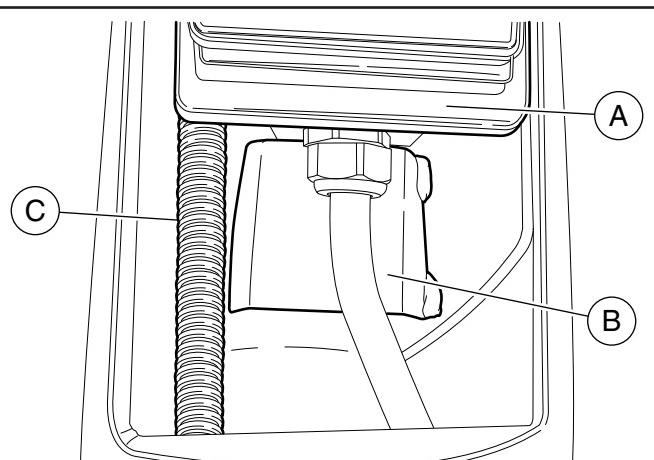
12. Position the conduit on the left side of the bollard (opposite the open metal slot side).



A. Tapered EVSE guide bracket
B. 1/2-in. liquid-tight flexible conduit

Figure 17. Conduit Positioned on Left

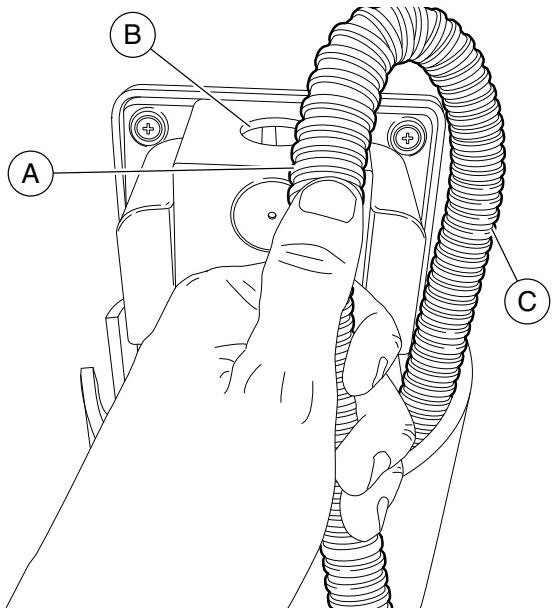
13. Gently guide the EVSE body down through the bollard until it rests on the top of the tapered guide bracket.



A. EVSE
B. Tapered EVSE guide bracket
C. 1/2-in. liquid-tight flexible conduit

Figure 18. EVSE Resting on Bracket

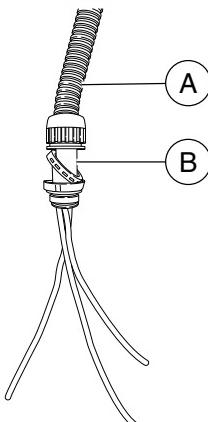
14. Mark 1/2-in. liquid-tight flexible conduit for length based on the required radius bend to attach to the top of the EVSE.



A. Location to cut conduit
B. Precut hole in top of EVSE
C. 1/2-in. liquid-tight flexible conduit

Figure 19. Location to Cut Conduit

15. Cut 1/2-in. liquid-tight flexible conduit to length. Do not cut wires.
16. Install approved, liquid-tight fittings to attach 1/2-in. liquid-tight flexible conduit to top of EVSE.



A. 1/2-in. liquid-tight flexible conduit
B. Liquid-tight fitting

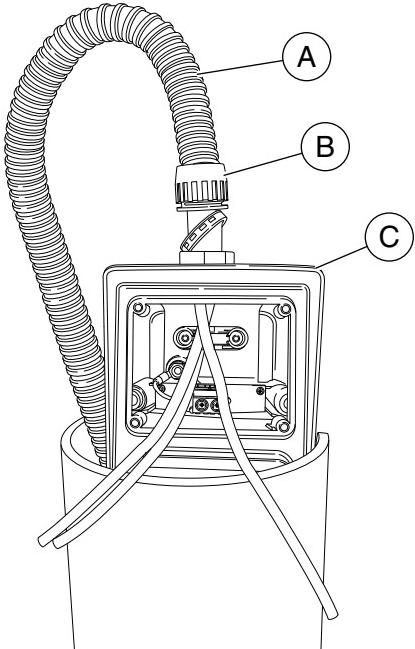
Figure 20. Fittings Installed

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NOTE: All connections must be liquid-tight.

17. Feed wires into the hole in the top of the EVSE and attach 1/2-in. liquid-tight flexible conduit with a liquid-tight fitting.



A. 1/2-in. liquid-tight flexible conduit
B. Liquid-tight fitting
C. EVSE

Figure 21. Wires Inserted into EVSE and Conduit Installed

18. Cut wires to length.

19. Strip wires and wire them into the EVSE. Refer to label on inside of EVSE cover or details on circuit board. Torque terminal screws to 10.62 ± 1 in-lb (1.2 ± 0.12 Nm).

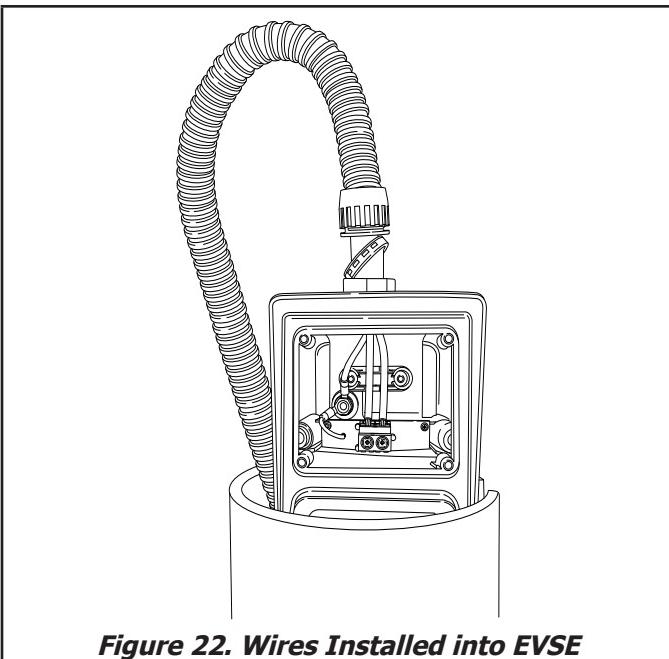
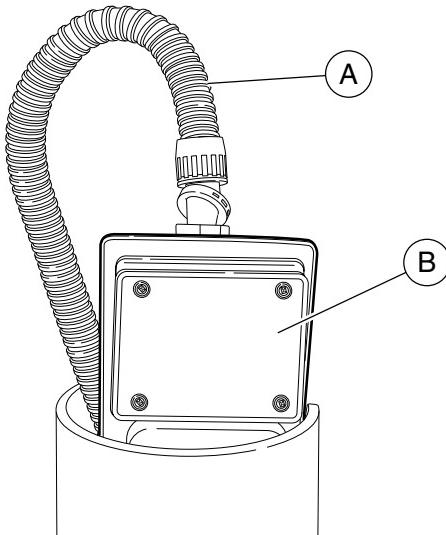


Figure 22. Wires Installed into EVSE

20. Install EVSE cover.



A. 1/2-in. liquid-tight flexible conduit
B. EVSE cover

Figure 23. EVSE Cover Installed

21. Apply decal to the front of the EVSE cover.
22. Continue lowering the EVSE until the front edge of the EVSE bottom cover rests on the ledge in the bollard front opening.

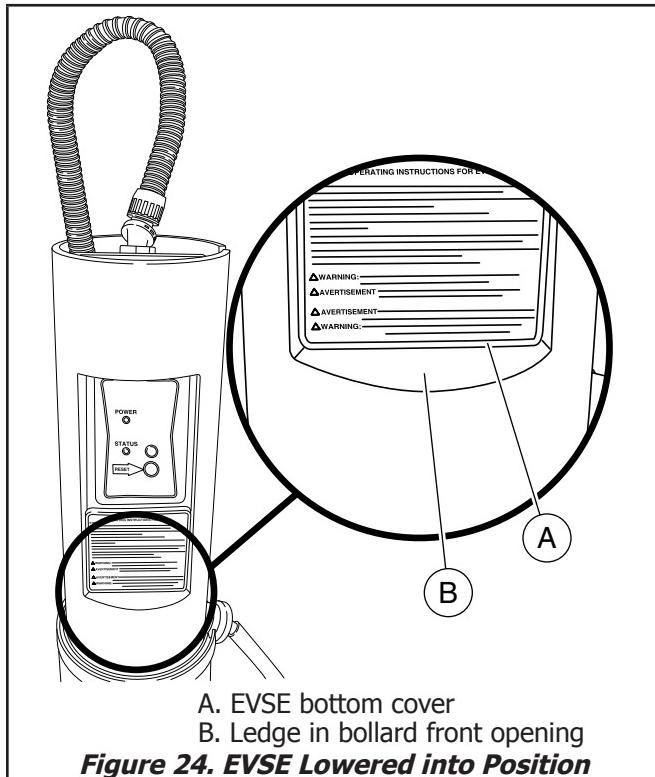


Figure 24. EVSE Lowered into Position

⚠ WARNING: The lower edge of the EVSE bottom cover must rest on the ledge of the bollard. Failure to position the EVSE correctly in the opening will cause damage to the EVSE when the locating set screw is tightened.

⚠ WARNING: Never use any other size set screw to secure the EVSE in place. If the set screw is too long, it will prevent installation of the upper cover.

23. Push any excess conduit down into the bollard. A loop will extend above the bollard and fit in the top cover.

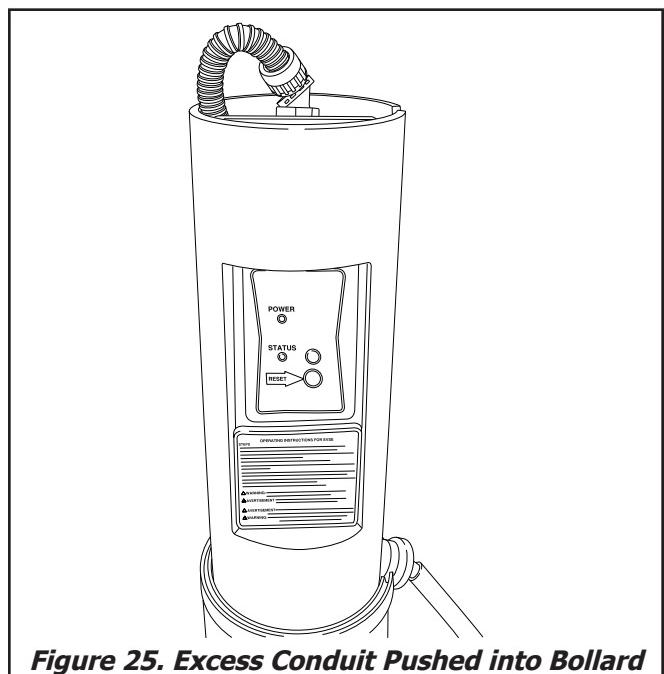


Figure 25. Excess Conduit Pushed into Bollard

24. Install the locating set screw to 50 ± 5 in-lb (5.5 ± 0.55 Nm).

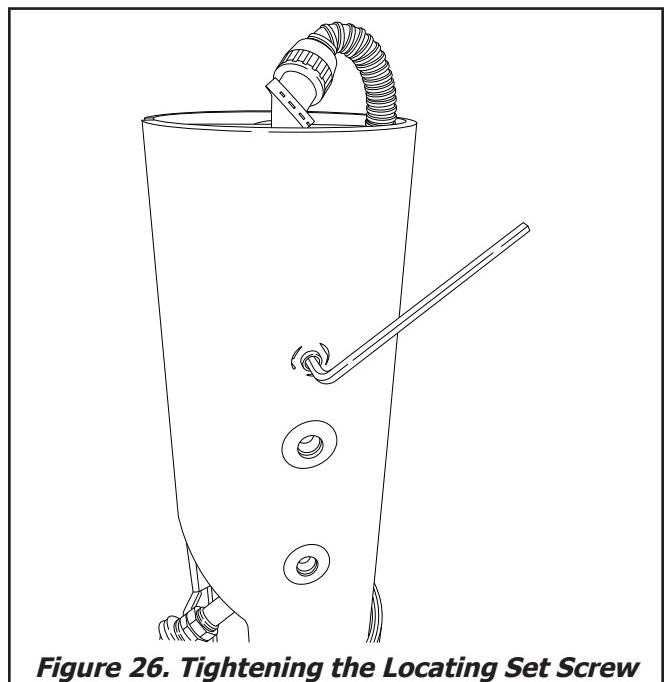


Figure 26. Tightening the Locating Set Screw

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25. Position the strain relief at the bottom of the side slot metal mounting bracket in the steel bollard. Position such that the rubber grommet (D) seats on the opening of the lower plastic bollard cover.
26. Tighten the inner strain-relief nut (A) inside the bollard hand tight. Using expandable pliers, tighten the nut an additional 1/4 turn.

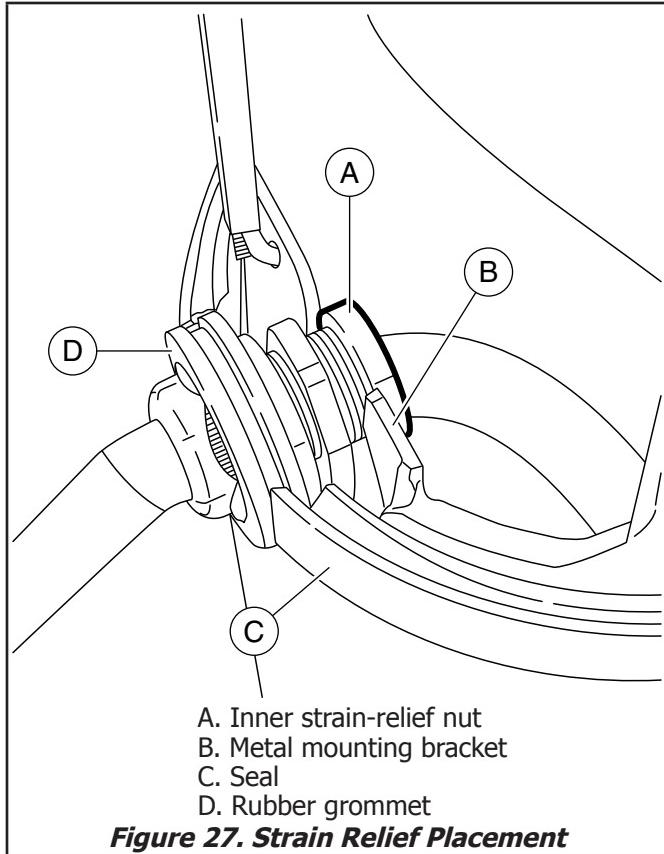


Figure 27. Strain Relief Placement

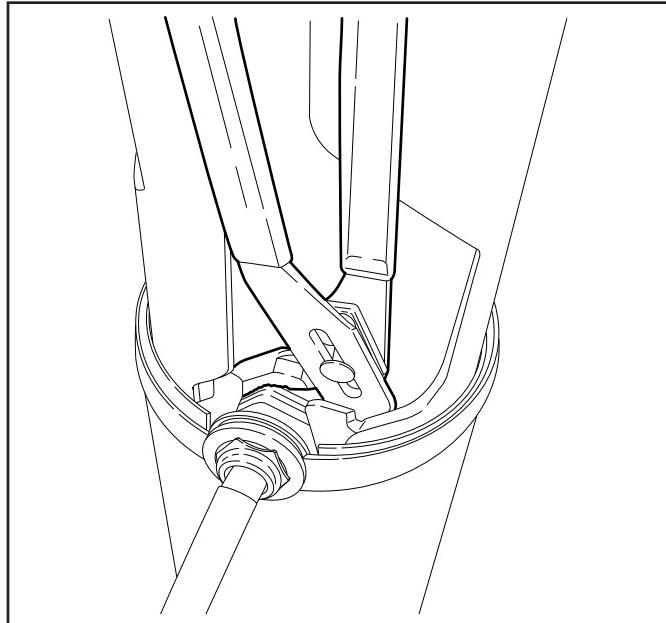


Figure 28. Tightening the Strain-Relief Nut

NOTE: Do not overtighten the strain-relief nut. The grommet may pull through.

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27. Carefully lower the upper plastic cover down onto the bollard base.

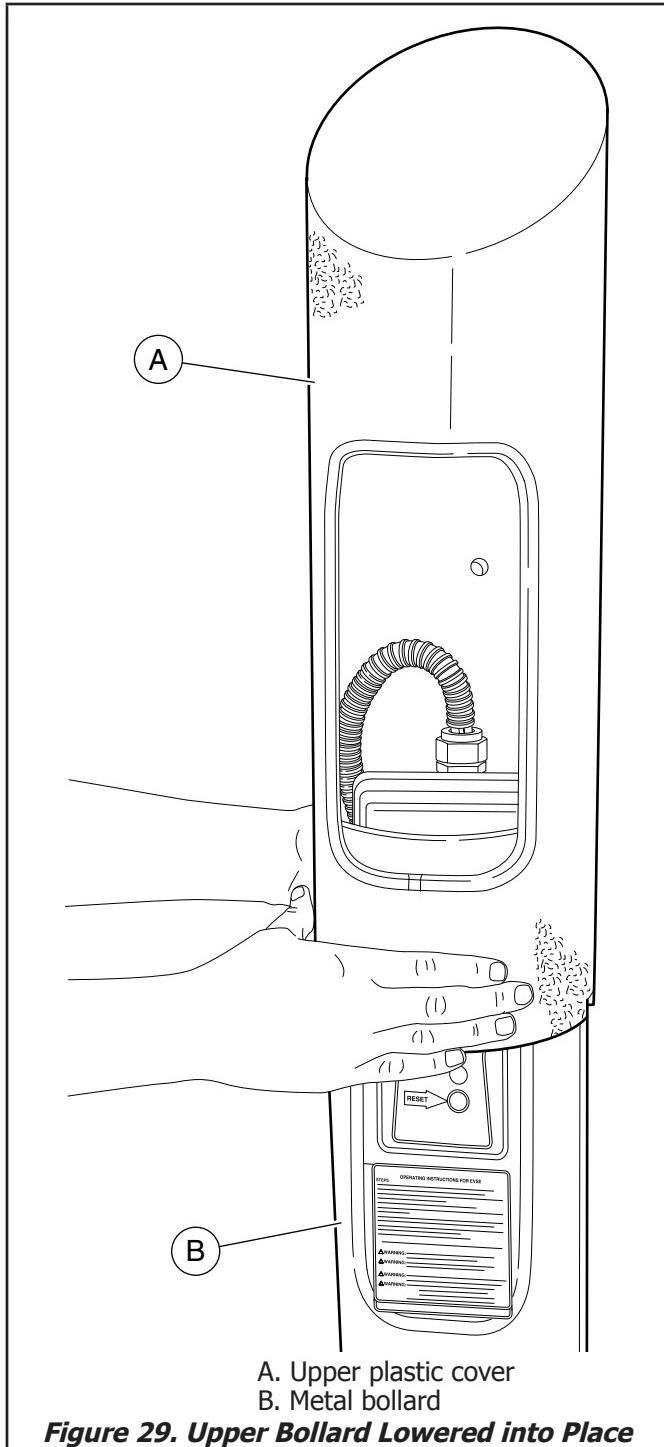


Figure 29. Upper Bollard Lowered into Place

28. Use a small flat-blade screwdriver or similar tool to guide the upper plastic cover into the seal.

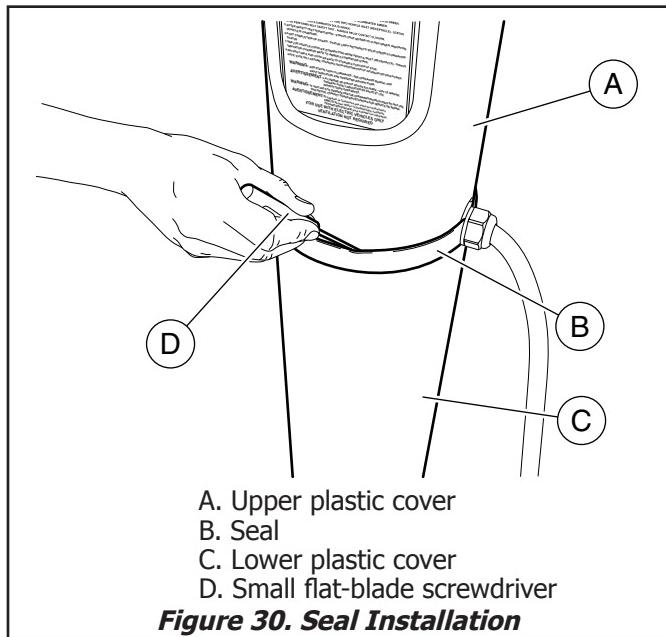


Figure 30. Seal Installation

29. While gently pressing down on the upper plastic cover, carefully slide the screwdriver around the bollard to extend the upper lip of the seal over the upper plastic cover. The upper cover may need to be tapped gently to fully seat it in the seal.

CAUTION: Use care not to cut or damage the seal during this procedure.

NOTE: When the upper plastic bollard cover is fully seated, the rear cable-management holes will be in line with the threaded holes in the steel portion of the bollard base and the rubber cable grommet will be centrally located with respect to the rubber seal.

Verify the cable-management holes and the rubber cable grommet are each properly aligned.

30. Use a 5/16-in. hex-head wrench to install the rear cable-management hook with the two cable-management retaining screws. The torque on the cable-management retaining screws should be 60 ± 5 in-lb (6.8 ± 0.55 Nm).

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- Loop the cable onto the cable-management holder.

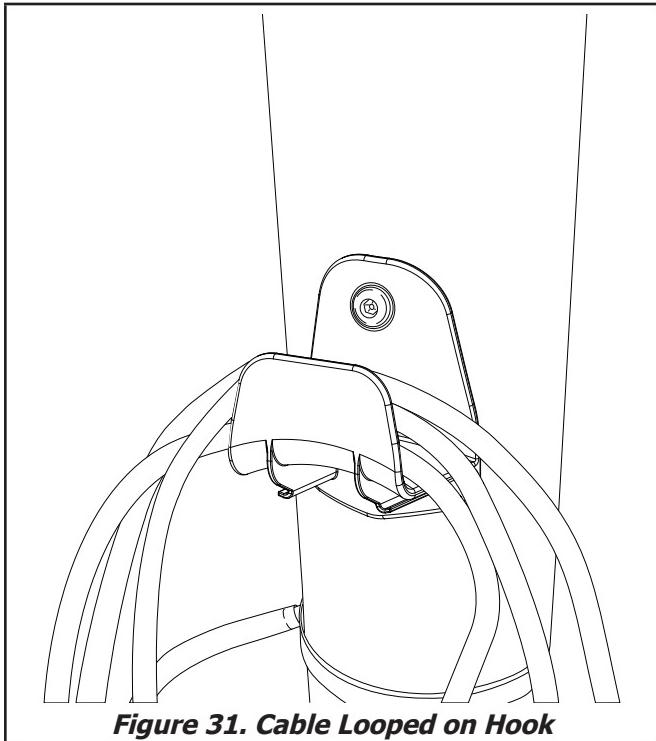


Figure 31. Cable Looped on Hook

- Switch the main circuit breaker to the ON position and verify that the Power LED is illuminated solid green and the Status LED is illuminated solid amber on the EVSE.

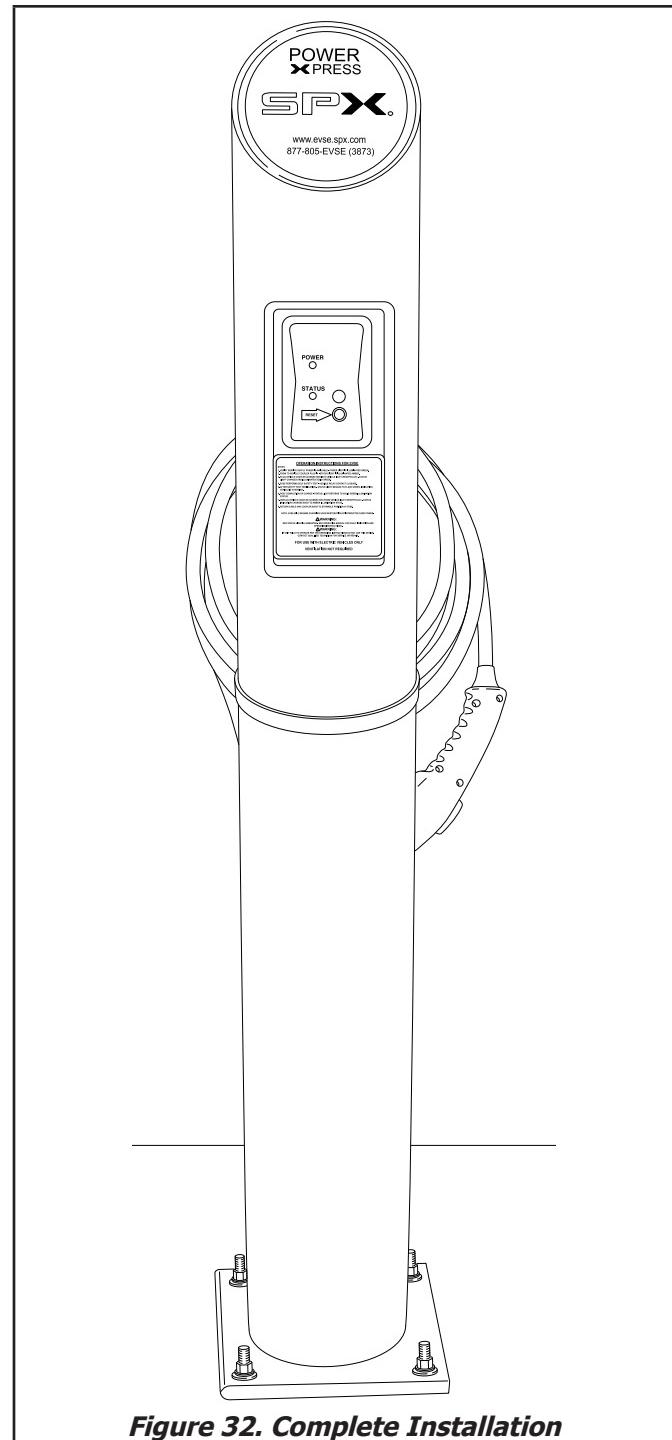


Figure 32. Complete Installation

EVSE POWER AND STATUS LED INDICATIONS

| POWER LED | | STATUS LED | | CONDITION |
|-------------|---|---|----|---|
| (OFF) | ○ | (OFF) | ○ | NO SERVICE SUPPLY POWER |
| GREEN SOLID | ● | AMBER SOLID | ■ | EVSE POWERED; VEHICLE COUPLER NOT CONNECTED |
| GREEN SOLID | ● | GREEN SOLID | ● | WAITING TO CHARGE |
| GREEN SOLID | ● | GREEN BLINKING | ★ | VEHICLE IS CHARGING |
| GREEN SOLID | ● | 1 OR 2 RED BLINKS EVERY 2 SECONDS | ●* | PILOT CHARGING ERROR* |
| GREEN SOLID | ● | SOLID RED THEN GREEN BLINK EVERY 2 SECONDS | ●* | GROUND FAULT DETECTED* |
| GREEN SOLID | ● | RED BLINKING | ●* | GROUND MONITOR INTERRUPTED* |
| GREEN SOLID | ● | RED SOLID | ● | OPERATION FAULT* |
| GREEN SOLID | ● | (OFF) | ○ | OPERATION FAULT* |

*See Troubleshooting section for suggested solutions.

○ - No illumination

● - Solid illumination

★ - Flashing illumination

Power Xpress™ Bollard Charge Station Installation Guide



TROUBLESHOOTING

If there is a charging issue proceed with the following steps. If the issue persists after three attempts call Service Solutions U.S. LLC at 1-877-805-EVSE (3873) for assistance.

| Problem Indicated by LED Status | Solution |
|---------------------------------|--|
| Pilot charging error | <ol style="list-style-type: none">1. Verify supply-side power. The green POWER LED should be on. If green POWER LED is off, locate load center/panel and reset breaker.2. Press the master clear RESET button on the front panel of the EVSE to attempt a charge-restart.3. If the red STATUS LED remains on, disconnect the EVSE coupler from the vehicle charge port, wait 10 seconds, and reconnect the coupler. |
| Ground fault detected | <ol style="list-style-type: none">1. Disconnect main service power at service panel.2. Disconnect the EVSE coupler from the vehicle.3. Inspect the EVSE connector and the vehicle charge port verifying both are clean and undamaged. If vehicle charge port needs cleaning, follow manufacturer instructions for cleaning. Clean EVSE connector with a dry or damp cloth if necessary.4. Restore main service power.5. Reconnect the coupler to the vehicle port. |
| Ground monitor interrupted | <ol style="list-style-type: none">1. Disconnect main service power at service panel.2. Disconnect the EVSE coupler from the vehicle.3. Inspect the EVSE connector and the vehicle charge port verifying both are clean and undamaged. If vehicle charge port needs cleaning, follow manufacturer instructions for cleaning. Clean EVSE connector with a dry or damp cloth if necessary.4. Restore main service power.5. Reconnect the coupler to the vehicle port. |
| Operation fault | <ol style="list-style-type: none">1. Verify supply-side power. The green POWER LED should be on. If green POWER LED is off, locate load center/panel and reset breaker.2. Press the master clear RESET button on the front panel of the EVSE to attempt a charge-restart.3. If the red STATUS LED remains on, disconnect the EVSE coupler from the vehicle charge port, wait 10 seconds, and reconnect the coupler. |

Ground Fault Circuit Interrupt (GFCI) Tripped

If the EVSE detects a ground fault, power will be interrupted and the STATUS LED will illuminate (red flash with intermittent green). The EVSE will attempt to reset automatically and re-attempt charging (see note below on European models). If the fault condition persists after an initial automatic attempt, per the code, the EVSE waits 15 minutes before a second attempt is made. A total of four attempts will be made to restore vehicle charging. If the charging mode cannot be restored, the STATUS LED will illuminate solid red, and the EVSE will stay in fault mode.

NOTE: Automatic reset feature after ground fault (STATUS LED will be solid red) does not apply to **European EVSE models**. European standards dictate that user intervention is required by pressing the master clear RESET button on the front of the EVSE housing. If ground fault condition clears, EVSE will resume charging.

Missing Ground

If the EVSE detects a missing ground connection (rapid red flashing LED), power will be interrupted and the EVSE will not be capable of charging vehicle until a ground connection has been detected. Disconnect service power (breaker) and disconnect vehicle coupler from vehicle and contact a qualified Service Solutions U.S. LLC technician to validate the presence of a proper ground.

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LIMITED WARRANTY

THIS WARRANTY IS EXPRESSLY LIMITED TO THE ORIGINAL PURCHASER OF SERVICE SOLUTIONS U.S. LLC EVSE PRODUCT.

- **Power Xpress Bollard** is warranted against defects in materials and workmanship for one year from the date of installation.
- **EVSE Cables and Connectors** are warranted against defects in materials and workmanship for 90 days from the date of delivery.

This warranty is only valid to the original purchaser of the EVSE and is not transferable. All warranty claims must be made within the warranty period and proof of purchase must be supplied. This warranty does not cover the cost of freight to return the EVSE to Service Solutions U.S. LLC.

The sole and exclusive remedy for any EVSE found to be defective is repair or replacement, at the option of Service Solutions U.S. LLC. The existence of a defect shall be determined by Service Solutions U.S. LLC in accordance with procedures established by Service Solutions U.S. LLC. No one is authorized to make any statement or representation altering the terms of this warranty. This warranty covers only those defects that arise as a result of normal use of the EVSE and does not cover any other problems including those that arise as a result of abuse, neglect, improper maintenance, care or modification, operation outside of the EVSE's specifications or in a manner inconsistent with instructions regarding use. Service Solutions U.S. LLC does not make any representation or warranty regarding the continuous availability of electrical service to the EVSE.

This warranty gives the original purchaser specific legal rights. The original purchaser may also have other rights which vary from state to state. To the extent that this warranty is inconsistent with applicable law, this warranty will be deemed modified to be consistent with such local law.

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The EVSE should be installed only by a licensed electrician and in accordance with all local and national codes and standards.

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